9001

ASSESSMENT REPORT

GEOCHEMICAL AND GEOLOGICAL REPORT ON THE ARGUS 1, ARGUS 2, ARGUS 3 AND ARGUS 4 MINERAL CLAIMS (75 UNITS)

TOODOGGONE RIVER AREA
OMINECA MINING DIVISION

by

SHEILA A. CRAWFORD AND MOHAN R. VULIMIRI

LOCATION: N.T.S. 94E/7W
57°18' to 57°21' N Latitude
126°55' to 127°00' W Longitude

OWNER: SEREM LTD.

OPERATOR: SEREM LTD.

DATES WORK PERFORMED: June 3, 12, 17, 1980
July 1, 7, 8, 9, 1980
August 13, 1980

DATE: March, 1981

ABSTRACT

Geochemical silt and soil sampling, along with minor geological mapping and prospecting, were carried out on the Argus 1, 2, 3 and 4 claims during the 1980 field season. The claims are located in the Toodoggone River area (N.T.S. 94E/7W), 280 kilometers north of Smithers, B.C. A total of 141 silt and 83 soil samples were analysed for gold, silver, copper, lead and zinc. Twelve rocks were assayed or analysed for the same elements.

The area is underlain by feldspar porphyritic flows, tuffs and breccias and associated sediments, intruded by quartz monzonite, monzonite and syenite. Numerous gossans mark an extensive zone of disseminated pyrite and intense propylitic alteration. Locally, rocks are completely altered to silica and pyrite. Minor amounts of malachite and galena have been found.

Streams draining the gossanous area are consistently anomalous in silver, copper, lead and zinc, with a more patchy distribution of anomalous gold. Soils on the gossans are generally barren, indicating that the source of anomaly may be in rocks underneath the gossans. Areas outside of the gossans are generally barren or marginally anomalous.

Intensive prospecting of anomalous areas and systematic soil sampling of the valleys are recommended. An induced polarization survey may indicate if there is any deep-seated sulphide mineralization.

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LIST OF ILLUSTRATIONS

1. INTRODUCTION

The Argus 1, Argus 2, Argus 3 and Argus 4 claim groups are located between 57°18'N and 57°21'N latitude and 126°55'W to 127°00'W longitude in the Toodoggone River map sheet area, N.T.S. 94E/7W, Omineca Mining Division (see Figures 1 and 2). Elevation ranges from about 1430 meters (4700 feet) to 2010 meters (6600 feet) above sea level. Most of the property is above tree line. Topography is moderately rugged. Outcrop is well exposed on the mountains but generally covered by glacial till in the valleys.

Access to the property is by plane from Smithers to Sturdee Airstrip, a distance of 280 kilometers and from Sturdee Airstrip to the property by helicopter, a distance of about 13 kilometers.

The Argus 1 claim group consists of 15 units and the Argus 2, 3 and 4 of 20 units each. They are owned and operated by Serem Ltd.

The claims were staked on the basis of an anomalous heavy mineral sample from a stream draining the area. Previous work in the claims area was done by Kennco Explorations Ltd. who carried out a soil grid survey for copper, molybdenum, lead and zinc in 1969 (Xenos No. 1 group, Assessment Report No. 1984).

Work performed in 1980 by Serem Ltd. includes silt sampling of streams draining the property and soil sampling along contour traverses. Table I details the number of samples taken in each claim group. The purpose of this work was to define anomalous areas.

Geology of part of the claims was mapped and several grab samples were assayed.

Table I

Detailed List of Samples Taken in each Claim Group

Sample Type	Claim Group	No. of Samples
Silt, streams	Argus 1	26
	Argus 2	30
	Argus 3	44
	Argus 4	41
		141
Soil, contour traverses and gossan grab samples	Argus 1	18
	Argus 2	41
	Argus 3	11
	Argus 4	13
		83
Rock, grab samples	Argus 2	2
	Argus 3	7
	Argus 4	3
		12

Fig. 1 Location of Argus 1, Argus 2, Argus 3 and Argus 4 claim groups

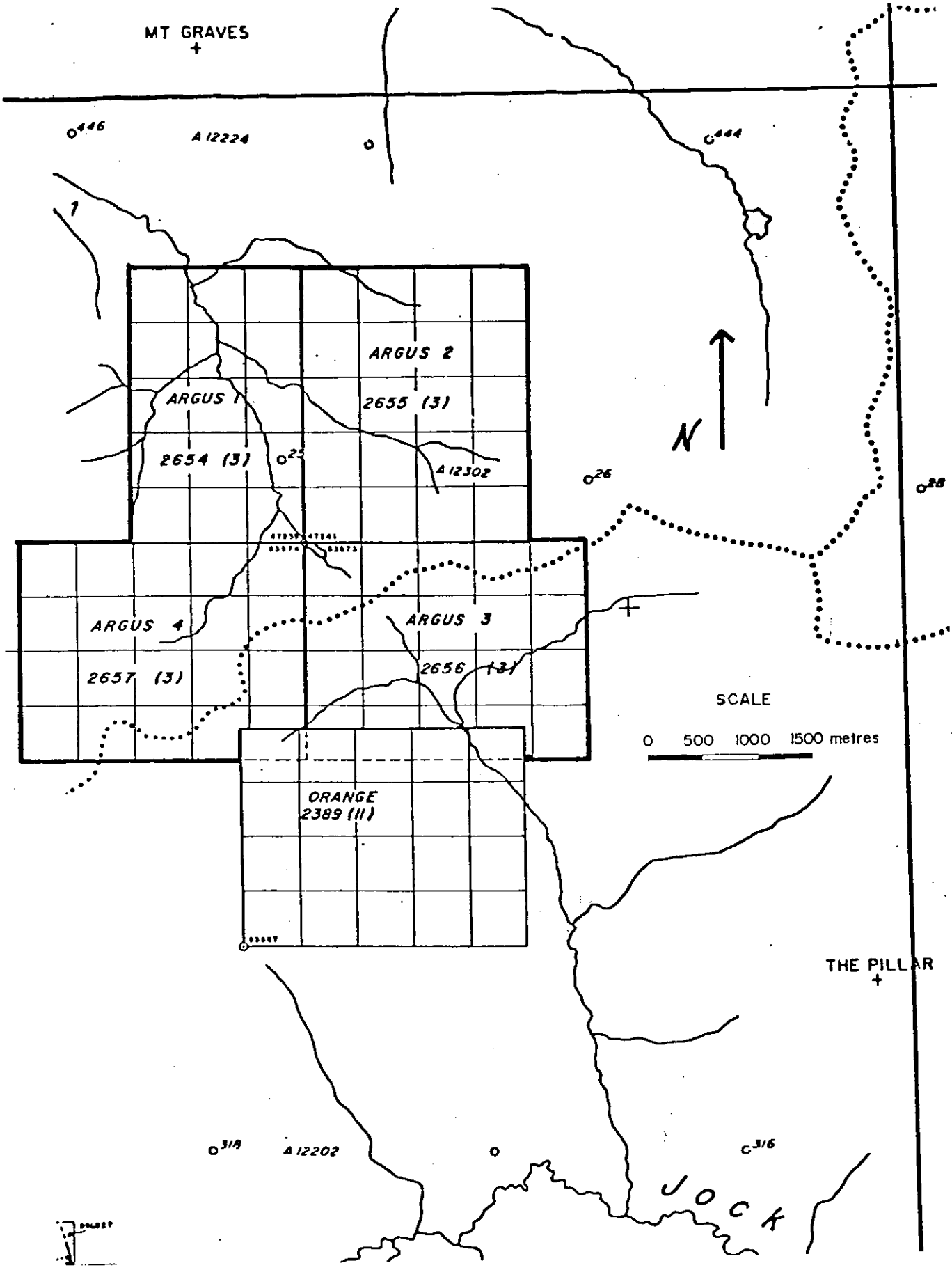


Fig. 2 Claims Map: Argus 1, Argus 2, Argus 3 and Argus 4 claim groups

2. GEOLOGY

The claims are underlain by feldspar porphyritic flows, crystal and lapilli tuffs, pyroclastic breccias, lahars and volcanically-derived conglomerate, mudstone and greywacke (Figure 3). These rocks are similar to Lower Jurassic Hazelton and Toodoggone groups described by Gabrielse et al (1975). They are intruded by monzonite, syenite and quartz monzonite of Lower to Middle Jurassic age. Late mafic dikes cut the entire sequence.

The volcanic and sedimentary sequence has been faulted into a number of blocks. Major faults trend northwest and northeast, with a minor trend to the north. Mafic dikes and mineralized fractures correspond to these trends.

3. ALTERATION AND MINERALIZATION

Numerous gossans on the claims mark an extensive zone of disseminated pyrite and intense propylitic (chlorite and epidote) alteration (Figure 3, insert). Yellowish-white clay alteration occurs along faults. Locally, rocks are completely altered to blue-white silica with disseminated pyrite. Minor amounts of galena and malachite stain have been found.

Outside of the propylitic zone, chlorite and epidote are confined to fractures and narrow haloes around syenite-monzonite stocks and dikes. Rocks are extensively hematized. Vuggy quartz and calcite veins occur in a few areas. Banded grey and amethyst quartz veins and adjacent malachite fracture fillings were discovered on the Argus 3 claims; however gold and silver assays from the area are in the background range.

4. GEOCHEMICAL SILT AND SOIL SAMPLING

Silt samples were collected along streams at 150 to 250 metre intervals, depending on where suitable silt could be found. Samples were taken from active material, that is, under flowing water, and placed in brown paper envelopes. The sample site and number were plotted on a map with a scale of 1 centimetre to 500 metres. Stream gradient and flow rate were noted.

Soil samples were taken at 100 to 150 metre intervals on traverses at approximately constant elevation. Pacing or Topofil was used to control distance and the locations were plotted at a scale of 1 centimeter to 500 meters.

The soil was placed in brown paper envelopes and the locality, depth of sampling, horizon, colour, grain size and amount of organic material were noted. All samples were marked with surveyor's flagging. Sampling depth varied from 5 to 20 centimetres, depending on the thickness of the organic layer. All samples are from the C horizon. Most have mixed grain sizes and are medium to light brown, except on the gossans where they are red to red-brown.

Samples were sent to Min-En Laboratories and analysed for gold, silver, copper, lead and zinc.

5. ASSAYS AND GEOCHEMICAL ROCK ANALYSES

Grab samples were selected from outcrops with favourable geology. Results are listed in Table 2 and sample localities plotted on Figure 3.

Table 2a ASSAYS

Sample No.	Rock Type	Au oz/ton	Au g/tonne	Ag oz/ton	Ag g/tonne	Cu %	Pb %	Zn %
Sc-28-80-16	Banded quartz in volcanic	.009	.31	.11	3.8	.007		
Sc-29-80-1	Banded quartz vein in silicified volcanic	.002	.07	.03	1.0	.006	.01	.04
Sc-29-80-2	Banded quartz vein in silicified volcanic	.001	.03	.05	1.7	.006	.01	.05
Sc-29-80-3	Limonite-pyrite in volcanic	.002	.07	.08	2.7	.093	.01	.04
Sc-29-80-4	Volcanic with malachite fracture fillings	.002	.07	.06	2.1	.901	.01	.02
Sc-29-80-5	Breccia with carbonate fracture fillings	.001	.03	.08	2.7	.006	.01	.05
Sc-29-80-8	Silicified volcanic	.001	.03	.07	2.4	.008	.01	.02
Sc-31-80-8	Volcanic with quartz & pyrite veining			.06	2.1		.12	.02
Sc-31-80-13	Volcanic with quartz & pyrite veining	.002	.07	.03	1.0	.021	.19	.03

Table 2b ROCK GEOCHEMISTRY

Sample No.	Rock Type	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
Sc-41-80-6	Quartz breccia in intrusive	20	1.0	155	15	120
Sc-41-80-7	Quartz vein	180	4.6	98	910	5600
Sc-41-80-8	Silicified intrusive with disseminated pyrite	30	1.2	16	224	521

6. GEOCHEMICAL ANALYSIS

Samples were sent to Min-En Laboratories and were analysed for gold, silver, lead, zinc and copper. The analytical procedure for each element is briefly described below:

The samples are dried at 95° C. Soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed and pulverized by ceramic plated pulverizer.

For gold, a suitable sample, weight 5 or 10 grams, is pretreated with HNO_3 and $HClO_4$ mixture.

After pretreatment the samples are digested with Aqua Regia solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

Sample solutions are prepared with Methyl Iso-Butyl Ketone for the extraction of gold.

With a set of suitable standard solutions, gold is analysed by Atomic Absorption instruments. The obtained detection limit is 5 ppb.

For silver, lead, zinc and copper, samples weighing 1.0 gram are digested for 6 hours with HNO_3 and $HClO_4$ mixture.

After cooling, the samples are diluted to standard volume. The solutions are analysed by Atomic Absorption Spectrophotometers using the CH_2H_2-Air Flame combination.

7. INTERPRETATION

Gold, silver, copper, lead and zinc analyses for stream silt and contour soil samples are plotted on Figures 4a to 4e respectively. Circles or triangles are completely blackened for anomalous values and partially for threshold values.

Gold values are marginally anomalous over most of the claims. One silt sample on Argus 4 runs 500 ppb Au. Silver is anomalous in gossanous areas, running as high as 5.0 ppm Ag in silts and 4.9 ppm Ag in soils. Silt samples from Argus 1, 4 and the west half of Argus 3 are anomalous in copper, but soils are almost all in the background range. It is possible that the source lies downslope from the contour traverses. Lead and zinc anomalies are coincident with copper, running as high as 152 ppm Pb and 2850 ppm Zn. Zinc, like copper, is at background levels in soils, but lead runs as high as 1240 ppm Pb.

In general, streams which are anomalous in silver, copper, lead and zinc drain gossanous portions of the claims. Gold values are slightly more scattered over the area. Intense leaching in the gossans is probably responsible for the lack of copper and zinc in soil samples taken up slope from the anomalous streams.

8. CONCLUSIONS AND RECOMMENDATIONS

Extensive fracture-controlled alteration and disseminated pyrite indicate that a sulphide-bearing hydrothermal system was active. The gossan zone may represent the oxide "cap" which overlies many epigenetic ore bodies. Strong silver-copper-lead-zinc anomalies in the streams may emanate from rocks underlying the exposed gossans.

Anomalous areas should be prospected in detail in conjunction with soil sampling in the valleys. An induced polarization survey is recommended to determine where or not deep-seated sulphide mineralization is present.

9. REFERENCES

Gabrielse, H.; Dodds, C.J.; Mansy, J.L.; and Eisbacher, G.H.; 1975: Geology of Toodoggone River (94E) and Ware West-half; G.S.C. Open File 483, Geological Survey of Canada.

Assessment Report 1984; British Columbia Ministry of Energy, Mines and Petroleum Resources.

STATEMENT OF EXPENDITURES

Analyses:

214 soils/silts	analysed for Au, Ag, Cu, Pb, Zn	@ $ 8.85	$1,893.90
10 silts	" " Au, Ag, Cu	@ $ 6.35	63.50
3 rocks	" " Au, Ag, Cu, Pb, Zn	@ $10.25	30.75
7 rocks	assayed for Au, Ag, Cu, Pb, Zn	@ $33.50	234.50
1 rock	" " Au, Ag, Cu	@ $22.00	22.00
1 rock	" " Ag, Pb, Zn	@ $20.50	20.50
Shipping cost from Smithers to Vancouver Laboratory			
237 samples		@ $ 0.30	70.80
			$2,335.95

Wages:

Geochemical Sampling: June 3, 12, 17, 1980
July 1, 7, 1980
August 13, 1980

S. Crawford	1 day	@ $70/day	$ 70.00	
R. MacRae	1 day	@ $40/day	40.00	
J. Rushton	1 day	@ $50/day	50.00	
R. Stowe	1½ days	@ $40/day	60.00	
J. Sweeney	1 day	@ $40/day	40.00	
G. Price	½ day	@ $55/day	27.50	

Geological mapping/prospecting: July 7, 8, 9, 1980
August 13, 1980

S. Crawford	3½ days	@ $70/day	$245.00	
J. Sweeney	1 day	@ $40/day	40.00	$ 572.50

Board, Lodging and Field Expenses	Per Man Day
Food	$10.80
Expediting	3.00
Equipment (lumber, hardware, generator, radio telephone)	10.43
Fixed wing support (does not include mobilization or JP-4 fuel hauls)	13.19
Helicopter support "	5.50
Fuel (propane, soil stoves)	4.12
	$47.04

10½ man days @ $47.04 $ 493.92

Continued ...

STATEMENT OF EXPENDITURES (Continued)

Transportation			
Helicopter			
3:15 hours @ $310 + $102 fuel/hour			$1,339.00
Drafting and Report Writing			
S. Crawford	3½ days drafting @ $70/day	$245.00	
	2 days writing @ $70/day	140.00	
Enlargements, reproduction, drafting costs		50.00	415.00
Total			$5,155.37

CERTIFICATE OF QUALIFICATIONS

I, Mohan R. Vulimiri, certify that:

1. I am a geologist, employed by Serem Ltd.
2. I am a graduate with a Master of Science degree in Economic Geology from the University of Washington.
3. I have been involved in mineral exploration in British Columbia since 1970 and have acted in responsible positions since 1974.
4. I have no financial interest, either direct or indirect, in the property.
5. The information contained in this report was obtained under my supervision.

Vancouver, B.C.

Mohan R. Vulimiri.

CERTIFICATE OF QUALIFICATIONS

I, Sheila A. Crawford, certify that:

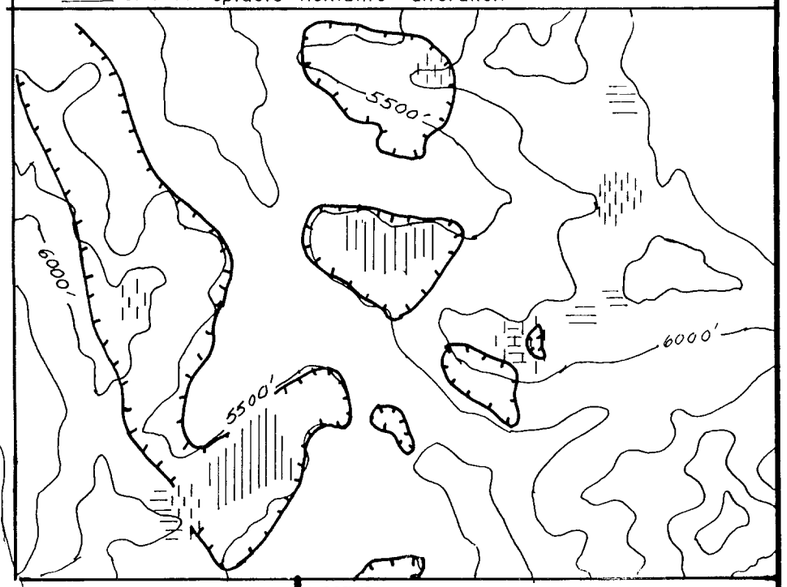
1. I am a geologist, employed by Serem Ltd.
2. I have an Honours Bachelor of Science degree (First Class) in Geology from Carleton University in Ottawa, Ontario.
3. I have worked in mineral exploration or geological mapping since 1975 and have acted in responsible positions since 1979.
4. I personally examined the property and directed the geochemical survey.
5. I have no financial interest, either direct or indirect, in the property.

Vancouver, B.C.

Sheila A. Crawford.

ALTERATION ZONES

- gossan : epidote - chlorite alteration, disseminated pyrite, carbonate fracture fillings
- pervasive silicification
- quartz fracture fillings
- chlorite - epidote - hematite alteration



ARGUS 1

ARGUS 2

ARGUS 3

ARGUS 4

1676 m 5500'

1829 m 6000'

38

31-13

31-8

62

30-9

minor chalcopyrite

68

56

malachite

28-16

29-1,2,3,4,5

29-8

41-8

41-7

minor galena

41-6

LEGEND

- mafic dikes
- quartz monzonite, monzonite and minor diorite (m JR ?)
- 'Toodoggone' crystal and lapilli tuffs, pyroclastic breccia, lahar; minor mafic flows (l-m JR ?)
- conglomerate, sandstone, greywacke (l-m JR ?)
- 68 bedding plane and dip
- fracture plane and dip
- fault
- 28-16 rock sample; see Table 2 for assays and analyses
- outcrop area
- contour, 500' interval

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PROJECT
TOODOGGONE

TITLE
GEOLOGY, ALTERATION ZONES AND ROCK SAMPLE LOCALITIES ARGUS 1,2,3 & 4 CLAIMS

DATE: JAN/81	DATA: S. CRAWFORD
N.T.S.: 94E/7W	DRAWN: S.C.
SCALE: 1: 20,000	CHECKED:

0 200 400 600 800 metres

FIGURE 3

Mt. Graves

1524 m 5000'

Saunders Creek

ARGUS 1

ARGUS 2

ARGUS 3

ARGUS 4

1676 m 5500'

1829 m 6000'

1829 m 6000'

N

LEGEND

- ○ silt sample site ; ppb Au
- △ soil sample site ; ppb Au
- ○ ≤ 15 ppb
- ◑ 20 - 45 ppb
- ● ≥ 50 ppb
- contour , 500' interval
- stream

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PROJECT TOODOGGONE

TITLE GOLD IN SILTS AND SOILS
STREAM AND CONTOUR TRAVERSES
ARGUS 1, 2, 3 & 4 CLAIMS

DATE 12/80	DATA S. CRAWFORD
N.T.S. 94E/7W	DRAWN S.C.
SCALE 1:20,000	CHECKED
0 200 400 600 800 metres	

FIGURE 4a

Mt. Graves

1524 m 5000'

ARGUS 1

ARGUS 2

ARGUS 3

ARGUS 4

1676 m 5500'

1829 m 6000'

1829 m 6000'

Saunders Creek

N

LEGEND

- ○ silt sample site ; ppm Ag
- △ soil sample site ; ppm Ag
- ○ ≤ 1.9 ppm
- ◑ 2.0 - 2.9 ppm
- ● ≥ 3.0 ppm
- contour , 500' interval
- stream

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PROJECT TOODOGGONE

TITLE SILVER IN SILTS AND SOILS
STREAM AND CONTOUR TRAVERSES
ARGUS 1, 2, 3 & 4 CLAIMS

DATE 12/80	DATA S. CRAWFORD
N.T.S. 94E/7W	DRAWN S.C.
SCALE 1:20,000	CHECKED
0 200 400 600 800 metres	

FIGURE 46

Mt. Graves

1524 m 5000'

1676 m 5500'

1829 m 6000'

1829 m 6000'

Saunders Creek

ARGUS 1

ARGUS 2

ARGUS 3

ARGUS 4

N

LEGEND

- ○ silt sample site ; ppm Cu
- △ soil sample site ; ppm Cu
- ○ 129 ppm
- ◑ 130 - 299 ppm
- ● 300 ppm
- contour , 500' interval
- stream

S.E.R.E.M. LTD.

PROJECT TOODOGGONE

TITLE COPPER IN SILTS AND SOILS
STREAM AND CONTOUR TRAVERSES
ARGUS 1, 2, 3 & 4 CLAIMS

DATE 12/80	DATA S. CRAWFORD
N.T.S. 94E/7W	DRAWN S.C.
SCALE 1:20,000	CHECKED
0 200 400 600 800 metres	

FIGURE 4c

Mt. Graves

1524 m 5000'

1676 m 5500'

1829 m 6000'

1829 m 6000'

Saunders Creek

ARGUS 1

ARGUS 2

ARGUS 3

ARGUS 4

N

LEGEND

- ○ silt sample site ; ppm Pb
- △ soil sample site ; ppm Pb
- ○ ≤ 54 ppm
- ◑ 55 - 109 ppm
- ● ≥ 110 ppm
- contour , 500' interval
- stream

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PROJECT TOODOGGONE

TITLE LEAD IN SILTS AND SOILS
STREAM AND CONTOUR TRAVERSES
ARGUS 1, 2, 3 & 4 CLAIMS

DATE 12/80	DATA S. CRAWFORD
N.T.S. 94E/7W	DRAWN S.C.
SCALE 1:20,000	CHECKED
0 200 400 600 800 metres	

FIGURE 4d

Mt. Graves

ARGUS 1

ARGUS 2

ARGUS 3

ARGUS 4

1524 m 5000'

1676 m 5500'

1829 m 6000'

Saunders Creek

N

LEGEND

- ○ silt sample site ; ppm Zn
- △ soil sample site ; ppm Zn
- ○ ≤ 299 ppm
- ◑ 300 - 599 ppm
- ● ≥ 600 ppm
- contour , 500' interval
- stream

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PROJECT TOODOGGONE

TITLE ZINC IN SILTS AND SOILS
STREAM AND CONTOUR TRAVERSES
ARGUS 1, 2, 3 & 4 CLAIMS

DATE 12/80	DATA S. CRAWFORD
N.T.S. 94E/7W	DRAWN S.C.
SCALE 1: 20,000	CHECKED
0 200 400 600 800 metres	

FIGURE 4e